

# The Relative Importance of Computer anxiety and Attitude toward Computer in predicting University students' Computer achievement

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## Abstract

This study aimed at investigating the relationship between computer achievement and computer anxiety and attitude toward computer for university students. Also this study aimed at investigating the relative importance for each of these variables in predicting students' computer achievement. The sample consisted of (162) males and (138) females. The results indicated significant correlations between computer achievement and independent variables (computer anxiety and attitude toward computer). The results also indicated that the computer attitude explained most of the variance in all samples of the study and it worked differently for males and females, for Males this variable explained (36%) of the variance and explained only (25%) for females.

**Key words:** Computer Anxiety, Attitude towards computer, Achievement in computer course, Relative importance.

## 1. Introduction:

Computer is one of the most important instruments in modern times; it plays an important and key role in information technology. The information and technology revolution data are notable developments emerged the emergence of computers. And came to put an end to the problems faced by the human in his various fields of activity and which have hampered his progress for a long period of time, the availability of the necessary information make it easy to take the appropriate decisions. And this information is not easy to obtain manually, whatever the efficiency of the system and no matter how many number of workers. The optimal use of information technology, computer on its forefront led to use the time in higher efficiently and increase in production.

The belief of the educational institutions supervisors at the basic & essential role of the computer at the scientific progress, and their continuous quest to prepare learners to take their role and position in the labor force at their communities. Which motivate them to introduce the computer subject in the curriculum, bringing the computer subject among the classes taught in schools, also the specialty of computer became among the specialties colleges, like other scientific specializations such as mathematics, physics, chemistry and others. The matter has been developed so the universities have created a specialized colleges known as Information Technology ( IT) colleges.

With this extra attention in computer study and specialized in it, for its vitality and its utmost importance in our time, but a sense of fear, anxiety and unpleasant is prevailing a lot of dealers during their dealings with electronic computers, especially in the early stages of dealing with it, Which may generate negative attitudes towards it (Marcoulides, 1989) , and the importance of these two variables, computer anxiety and attitude toward computer on the effectiveness of its use in a variety of situations, the need arises to further investigation and research on these two variables and their connection to the computer learning achievement .

### **Anxiety and computer anxiety:**

Anxiety is considered as uncomfortable experience and is close to the fear and there is no separator between them. And anxiety is vague and ambiguous and exporter often anonymous (Mcneil & Fuller & Estrada, 1978). Shoayb mentioned in 1988 that anxiety is a kind of unpleasant emotion the individual is acquired and aspired through situations encountered. Adds that anxiety has physiological symptoms observable and inferred through it, represented in increasing the number of heartbeat, muscle tension, and dry throat and mouth, and difficulty with speech, and the change in the pitch of the voice, but these symptoms do not occur all at one time, it's also if found won't be in one degree, it depends on the type and severity of the situation that occurs the anxiety.

The Kafafí, Salah al-Din and Ruby (1990) distinguishes between two types of anxiety by the reliability of this feature and lack of reliability, anxiety as a case and anxiety as a feature. Anxiety case is a case of temporary emotional case unstable and marked sense of fear and tension, felt by humans when he realizes threat situation ,

stimulates his nervous autonomic and strained muscles and preparing to meet the threat, and the disappearance of this disturbing case either eliminate it or keep away from it, ending the case of anxiety.

The anxiety as a feature is the individual's readiness to recognize particular conditions like threat, and to respond to these situations in various levels of anxiety. Anxiety as a feature is acquired behavior and is relatively stable at the individual, its level not different from situation to another, but it varies from one individual to another, anxiety as a feature is linked to the personality of the individual more than its association with the characteristics of the situation in which it occurs anxiety. the computer anxiety which is defined as a feeling of confusion and fear resulting by dealing with the computer, is linked with the two types of anxiety, anxiety as a case and anxiety as a feature and this what Kernan, & Howard, 1990 referred to in their study to that computer anxiety is correlated clearly with the state of anxiety and feature of anxiety.

#### **Attitudes and attitude towards computer**

In terms of attitudes, Zagal and Khalili (1990) mentioned it became a key building block in the social sciences in general and social psychology particular. It greatly affects human life as a wave and defended his behavior in his different life.

And refers Back (1990) that lend to recognize attitude and activities of individual sense helped him to accomplish a lot of goals, and to attitude study will remain the most important needs to interpret human behavior for the purpose of counter influences that operatio on the composition of negative attitude .And knows McNeill and Fuller and Estrada (Mcneil, Fuller & Estrada, 1978) attitude as a tendency to get to know a certain way toward something specific, such as people, ideas and events, and that attitude involves three basic components which are: emotional, knowledge and behavioral components, and attitude characteristics are as educated enters the cognitive side, and it an assessment and enter into this aspect, the emotional side, which is relatively constant.

For the students attitude towards computer, (Reece & Gable, 1982) mentioned that students attitude towards computer is connected to their computer knowledge how is their actual use for the computer.

Hamdi study (1989) showed that many of the students' attitudes about the use of computers in education changed once students sitting to computer learning and receiving through. The researcher said that the rise in students' achievement and positive attitudes towards the use of computers in education is influenced to a large extent how the effectiveness and efficiency of computerized tutorial and performed through the device.

However with this extra interest in studying computer and specializing in it, for its vitality and its great importance in our time, but it prevails feeling of fear, anxiety and lack of pleasure for many of learners during dealing with electronic computers, especially in initial stages of dealing with it, which may generate negative attitudes towards it. (Marcoulides, 1989).

#### **2. Objective of the study and its questions:**

(Kernan and Howerd, 1990) mentioned that computer anxiety and attitude toward it are different structures and not one structure. Hence search to the two must be separately, and so came this study to identify the amount of correlation between the achievement of university students in the subject of computer one hand, and all of the variables of computer anxiety and the attitude toward it on the other hand, also aimed to determine the relative importance of each of these two variables (computer anxiety and attitude towards it) when predictable by them the university students' achievement in the computer course , and specifically the study endeavored to answer the following questions:

1. What is the value of correlation, and the level of significance of this relationship between the university students' achievement in the computer course on one hand and the computer anxiety and attitude toward it on the other hand?
2. What is the relative importance of each of the computer anxiety, and the attitude towards computer when predictable by them, the university students' achievement in the computer course from males and females?

#### **3. The importance of the study:**

With this extra interest in studying computer and specializing in it, for its vitality and its great importance in our time, but it prevails feeling of fear, anxiety and lack of pleasure for many of learners during dealing with electronic computers, especially in initial stages of dealing with it, which may generatio negative attitudes towards it and the importance of the relationship between students anxiety of the study courses on hand and their achievement towards it one other hand. The fact that computer anxiety and attitude towards it are different structures highlight the importance of this study dealing correlation between these variables (computer anxiety and attitude towards it) on one hand and achievement in computer course on the other hand , also highlights the importance of this study because it assess predictive capacity of these two variables (computer anxiety and attitude towards it) in study achievement in computer course with its study sample, because it determine the extent of the contribution of each of these two variables in explaining the variation in student achievement in computer course by determining the relative importance of each of these two variables.

#### 4. Definition of Keywords:

In this study a number of keywords were mentioned, the following procedural definition of each:

**Computer Anxiety:** is a feeling of confusion, fear and tension that afflict the individual in situations in which he deals with computer, whether in daily life or academic. Computer anxiety is scaled in this study by computer anxiety scale used in it, as it reflects the degree the respondent obtained on this scale the degree of anxiety he has from the computer.

**Attitude towards computer:** is the expression of students' feelings student toward the computer and how acceptable and enjoyment working on it, and appreciation for the benefit of computer and interest in and determined the attitude towards computer in this study primarily obtained by the student as a result of his response on a attitude towards computer scale used in this study.

**Achievement in computer course:** is the student's achievement in the computer course according to the results of examinations, and is determined by the level of student achievement in computer course in this study through his Accumulative average in this course when conducting this study.

**Relative importance:** the contribution of the independent variable in predicting the variable's an indication of its relative importance, which is scaled by the increase in the coefficient of determination multi added by the variable when it entered the regression equation, or by decreases in the multi coefficient of determination when deleting the variable from the regression equation. The "F" statistical can be used to find out whether these increases or decreases are substantial or not.

#### 5. The method and procedures:

##### 5.1 Study sample:

(300) "males & females" students of whom (162) male students and (138) female students participated in this study from three universities: Yarmouk University, the University of Jordan, and the University of Science and Technology were randomly choosen, distributed as in the following table:

Table (1)  
 Study sample according to university and Gender

University	Males	Females	Total
Yarmouk Universit	58	46	104
University of Jordan	53	48	101
University of Science and Technology	51	44	95
Total	162	138	300

##### 5.2 Study Instruments:

In this study computer anxiety scale and attitudes towards computer scale developed by the researchers for the purposes of this study were used:

###### A. Computer anxiety scale:

This scale consists of (30) items include situations related to computer concern and distributed into five dimensions: 1 - Concerns over a little understanding of the computer. 2 - Anxiety resulting from the use of computers. 3 - Anxiety caused by computer-related instruments. 4 - Anxiety over the impact of computers on society. 5 - General anxiety of the computer. And answered for each item of the scale by one test of the gradual points corresponding to each of them to reflect this staging level of anxiety range from never concerns me to concerns me to concerns me very much (never concerns me at all, concerns me a little bit, concerns me, concerns me too much, concerns me too too much). The grades extent on the scale from 30 (30x1) to 150 (30x5) and high grades on the scale indicates to high level of anxiety.

The main steps taken by the researcher in this scale structure are summarized by the following steps:

1. Determine the dimensions of the scale, has been taking advantage of reviewing previous literature & studies exposed to the computer anxiety and searched in it, as Harrison and Rainer study (Harrison and Rainer, 1992), (Kernan and Howard, 1990) and Marcolides study (Marcolides, 1989) also the researcher has benefited in this field of responds of 50 students of the university students who are studying computer where they were asked to mention the anxiety resources that they felt during exposure and dealing with computer.
2. Second step writing scale items to take advantage of sources, the searcher recognized & mentioned in the first step. 40 items covered the scale five dimensions were written, taking into consideration in writing these items many advises provided by specialists and are mentioned in many of the studies on the structure and development standards in this field. So that the scales items are characterized in a number of qualities of which:

1. The language of the items to be easy and straightforward.
2. The items to be as short as possible.
3. The item to contain one idea.
4. Avoid using two negatives in single item.
5. The items to be clear and unambiguous.
6. Avoid drafting items in the past language.
7. Avoid using certain vocabulary like only, just, and similar.
8. Avoid drafting items in the form of facts.

After writing items numbered (40) these items were displayed on a group of specialists arbitrators for arbitration to check the veracity of its content and true its linguistic formulation and its suitability for computer anxiety scale, and in the light of arbitrators observations, (5) items of the displayed items for arbitration were excluded. After the arbitration procedures, the remaining items numbered (35) randomly arranged, were written and printed with the scale implantation instructions and prepared for the purpose of experimenting.

3. The third step experiment the items after preparing the scale and become in its appropriate image for experimenting & was applied to a experimental sample consisting of (50) male & female students from outside the study sample in order to identify psychometric characteristics for the items using statistical package (SPSS) and a result of the experimental, the less distinguished items were deleted (for its link to the scale) from 0.30 so the scale will have a high degree of internal consistency, and based on this standard (5) items were deleted, and the scale became in its final form contains (30) item

#### Computer concern scale validity

The validity of Computer concern scale was verified in several ways:

1. Display the scale on a group of specialists' arbitrators as previously mentioned.
2. The second method was by calculating the internal correlation coefficients items for the scale items as of the validity of its construction. The correlation coefficients were calculated with its dimensions, and with the scale. Correlation coefficients values between the scale dimension and the overall scale is a statistical significant at the level of (0.01) and are considered good indicators of internal consistency of the scale.

Table (2)

Correlation coefficients for computer anxiety scale dimensions with each other, and with the scale

Dimension	1	2	3	4	5	Scale
1	-					0,80
2	0,67	-				0,78
3	0,72	0,69	-			0,83
4	0,64	0,61	0,60	-		0,71
5	0,43	0,42	0,47	0,35	-	0,59

3. The third validity coefficient was the value of concurrent coefficient validity of the scale, which was obtained by calculating the correlation coefficient between study sample' grades numbered (45) respondents on the scale and their averages in the computer course and the this value was (-0.48) and it is statistically significant at the level of ( $p < 0.01$ ).

4. The fourth validity coefficient was the value of concurrent coefficient validity of the scale, which was obtained by calculating the correlation coefficient between the grades of the previous study sample numbered (45) respondents on the scale and their grades on the attitude towards computer scale. The valuable correlation coefficient was (-0.64) which is statistically significant at the level ( $P < 0.01$ ).

The reliability of the computer anxiety scale:

Reliability coefficients of computer anxiety scale were estimated in two ways:

1. Applying Cronbach alpha equation to estimate internal consistency of the 50 sample students (males & females), the value of alpha coefficient was (0.87), and this value is a good indicator of the internal consistency of the scale.
2. Estimating the reliability coefficient by Test-retest in three weeks time difference on the responds of a sample of 50 students (males & females) enrolled in computer courses, the value of the repetition reliability coefficient was (0.82) and this value is a good indicator of the reliability of the of the respondents results on computer anxiety scale.

#### B- Attitude towards computer scale:

The attitude towards computer scale consists in its final form of (30) item, including positions related to computer, 1 – like enjoy working on it and use it, 2 – The usefulness of computer use and interest in it 3 - describe feelings toward computer and the desire to own it. 4 - describe feelings related on computer impact on society, 5 - describe feelings about choosing a specialty related to the computer and the desire to learn it.

Each item of the scale items is answered by choosing a scale point corresponding to each of them, so as to reflect this scale the ratio toward computer which range from highly agree to highly disagree (highly agree, agree, neutral, disagree, highly disagree) the relations extent on this scale from 30 (1x30) to 150 (5x30). The high grades achieved on the scale indicates on a high positive direction towards computer and low grades achieved on the scale indicates to a negative direction towards computer.

The steps the researchers followed in constructing this scale summarized in the following steps:

1. Renew the attitude subject, where Muller states (Mueler, 1986) that first attitude scales structure steps starts in defying the attitude subject, which is the attitude towards computer in this study, and gather the scale items, then apply it and calculate the necessary statistics for it. Based on this, the steps taken by the researchers in the attitude towards computer scale construction in this study can be summarized as follows:

– Define the consisting dimensions of the attitude towards computer:

This was done taking advantage of previous literature review, and studies that have worked on the attitudes towards computer development such as Abdel-Gaid, Trueblood & Shirgey, 1986 study, Reece, Gable, 1982 study, Popovich, Hyde, Zakrajsek & Blumer, 1987, Harrison & Rainer, 1992, Coover & Delcourt, 1992 & Loyd & Gressard, 1987.

The researchers has also benefited in other responses of (60) male & female university students who study computer, where they were asked to express about the attitudes they carry for computer and its use, its usefulness, and interest in it, and its effect on society and the desire to specialize in studying it or choosing specialties related to the computer.

- The second step write scale items in its preliminary image drawing upon sources which were mentioned in the first step, and the number of items were (43) items covered scale dimensions that were mentioned and formed these items (Pool of items) and those items were presented on a committee of specialists arbitrators for arbitration to verify the veracity of its content and suitability to scale the attitudes towards computer. As well as the safety of its linguistic formulation, and in the light of the observations of arbitrators 6 items were excluded, and write the remaining items numbered (37) items randomly and prepared for testing it.

- The third step, test the items after preparing it and became in proper way for trying, where it was applied on experimental sample consisting of (50) male & female students from outside the study sample in order to identify its psychometric characteristics using statistical package (SPSS) and a result of its workout, (7) items which were less distinguished than (0.3) and the number of the scale items in its final form became (30) items.

#### Attitude towards computer validity scale

Attitudes towards computer validity scale were verified in several ways:

1. The scale achieved the first validity significance by defining the dimensions of the scales and writing the items that covered these dimensions and arbitration of these items.

2. The second way that was reached to indicate the scale validity significance was by calculating the items internal coefficients as an indicators of its significance and its internal consistency, the Correlation Coefficient of each item with its dimension and with the scale as whole was calculated, as coefficients distinguish these items and indicators on its internal consistent and its validity significance also the dimensions correlation coefficients were calculated with each other and with the scale table (3) and the values of correlation coefficients between the dimensions of the scale and with the whole scale statistically significant at level ( $P < 0.01$ ) and are considered good indicators of the internal consistency of the scale.

Table (3)

Correlation coefficients for attitude towards computer scale dimensions with each other, and with the scale

Dimension	1	2	3	4	5	Scale
1						0,86
2	0,67					0,78
3	0,65	0,55				0,74
4	0,64	0,65	0,62			0,78
5	0,71	0,70	0,67			0,80

3. The third validity coefficient was the concurrent coefficient validity value of the scale, which was obtained by calculating the correlation coefficient between study sample 'grades numbered (45) male & female students on the scale and their grades on the computer anxiety scale and the correlation coefficients value was (-0.64) and it is statistically significant at the level of ( $p < 0.01$ ).

4. The forth validity coefficient was the value of the concurrent coefficient validity value of the scale which was obtained by calculating the correlation coefficient between the grades of study sample numbered (45) respondent on the scale and their averages on the computer course. The value of the correlation coefficient was (0.42) which is statistically significant at the level ( $P < 0.01$ ).

The reliability of attitude towards computer scale:

Reliability coefficients value of attitudes towards computer was estimated in two ways:

1. Applying Cronbach equation alpha value to the responses of the 40 male & female students on the scale, the value of reliability coefficients was (0.89). This value is high and good indicator of the internal consistency of the scale

2 - The second way in which by the reliability coefficient scale attitude toward computer was test-retest by calculating Person correlation coefficient between grades respondents on the scale in two times application, interval duration (3) weeks and on study sample of sample consisting of (45) male & female students from the specialty of computer and enrolled in computer courses at the university and the value of reliability coefficient repatriation (0.84) and considered to be of high value and a good indicator of the reliability of the results of the respondents on the scale

### 5.3 Procedures:

After selecting the study sample, study instruments was applied on the study sample collectively in the lecture halls under the supervision of teachers and the application was being in one session, and after the application procedures were done and collected the answers booklet, all data were entered in the computer memory for analysis and access to statistics needed to answer the study questions.

### 5.4 Statistical analysis:

To answer the first question of the study questions which revolves around the values of correlation coefficients between the study variables(achievement in computer course, computer anxiety and attitude towards computer) Pearson correlation coefficients were calculated between these variables on the whole data study sample and the sub-samples.

To answer the second question of the study questions, stepwise regression analysis on the whole group members' data and the sub-groups as well.

### 6. Results and discussion:

First: Results related to the first question of the study questions concerning the values of correlation coefficients and the level of significance of these values between the university students aachievement in the computer course in one hand and their computer anxiety and their attitudes towards computer on the other hand, To achieve this, the correlation coefficients values were calculated between these variables in the study group sample, and its sub-samples. Table (4) displays the values of correlation coefficients between the variables of the study with all members of the study sample.

Table (4)  
 Correlation coefficients value between the study variables of the study sample

Variables	Computer anxiety	Attitude towards computer
computer Achievement	-0.50*	0.55*
Attitude towards computer	-0.70*	

\* Statistically significant at the level of  $P < 0.01$

clear from table (4) that the values of correlation coefficients between the variables of the study with all study sample were statistically significant at the level of less than ( $P < 0.01$ ) and in the expected direction. The strongest variables related to computer achievement was attitude towards computer, where the value of the correlation coefficient between the two (0.55), the value of computer anxiety correlation coefficient in computer achievement was(- 0.50), and the value of computer anxiety in attitude towards computer correlation coefficient was (- 0.70). And all the values of the whole correlation coefficients values which appear in the table (4) statistically significant at the level of less than (0.01).

Clear from table (5) the values of correlation coefficients between the study variables to the male members' sample. In Table (5) shows that the most powerful of these variables.

Table (5)  
 Correlation coefficients between the study variables to male sample

Variables	Computer anxiety	Attitude towards computer
Computer achievement	-0.55*	0.60*
Attitude towards computer	-0.75*	

\* Statistically significant at the level of  $P < 0.01$

Linked to the computer achievement is attitude towards computer variable (0.60), followed by computer concern variable computer which has been correlated in computer achievement in negative relationship reached (-0.55), but the correlation coefficients between the anticipated variables in between, was (-0.75) and all the correlation coefficients values between the study variables for males sample Statistically significant at level less than  $P < 0.01$ .

Clear from table (6) the values of correlation coefficients between the study variables to the female members' sample. From this table, it's clear that the most powerful variables correlation in computer achievement is the attitude towards computer (0.50).

Table (6)  
 Correlation coefficients between the study variables to female sample

Variables	Computer anxiety	Attitude towards computer
Computer achievement	-0.45*	0.50*
Attitude towards computer	-0.65*	

\* Statistically significant at the level of  $P < 0.01$

Followed by computer anxiety variable which has been correlated with computer achievement negatively (-0.45). The value of the correlation coefficient between the attitude towards computer variables and computer anxiety was (-0.65). and all the correlation coefficients values between the study variables for females sample Statistically significant at the level of statistical significance ( $P < 0.01$ )

Note from the above that the values of correlation coefficients between the attitude towards computer variables and computer achievement to the study groups ranged between (0.50) and (0.60) and they were all statistically significant at the level of less than (0.01). Values that reflect a positive correlation, indicating the students' higher achievement in computer offset by a rise in the level of the attitude towards computer. This result came in consistent with the results of (Reece & Gable, 1982) study, Hamdy 1989 study and Marcoulides, 1989 study.

The correlation coefficients values ranged between computer anxiety variable and computer achievement for the study groups between (- 0.45) and (-0.55). And they were all statistically significant at the level of less than (0.01), and it's values expressing a negative correlation, indicating that the high level of computer anxiety accompanied by a decrease in students' computer achievement.

Also the high computer achievement accompanied by a decrease in computer anxiety level. This result came in the expected frame and agreed with Kerman & Howard 1990 study results, The results of which indicated that the relationship between computer anxiety and computer achievement is a negative relationship.

The results of the study showed, a difference in the strength of the relationship between the predicted variables on a hand and computer achievement on the other hand were the values of these transactions higher in males than in females. The same applies to the relationship correlation between the same predicted variables (attitude toward computer, & computer anxiety) was higher among males sample than among female sample. This may explain that the anxiety levels of the study subjects and attitudes towards study subjects may vary depending on the student's gender. As these variables are variables related to the emotional aspects of the individual, and is different according to gender is expected.

To answer the second question of the study questions, concerning determine the amount of the contribution of each variable of the study variables (attitude towards computer, and computer anxiety) to predict computer achievement, the stepwise regression analysis was used. Table (7) shows the results of this analysis in the overall study sample.

Table (7)  
 Results of stepwise regression analysis in computer achievement on the predicted variables for the overall sample

Predicted by	Predicts	Steps	R	R <sup>2</sup>	R <sup>2</sup>	F value	F indication
Computer achievement	Attitude towards computer	1	.5500	.3025	.3025	129.24	.00000
	Computer anxiety	2	.573089	.328431	.025931	11.468	.00080

It is clear from the regression analysis results (Table 7) that predicted variables (attitude towards computer and computer anxiety) explained 32.84% of computer achievement varying degrees for the overall study sample. And explained the attitude towards computer 30.25% of the variance, and the computer anxiety explained 2.59%. also it's clear from this table that the variable value ( R<sup>2</sup>) in the correlation box was Statistical function (P

<0.001) for each variable of the predicted variables, and the explanation for attitude towards computer is due to most explained variation of the computer achievement (30.25%) out that attitude towards computer was stronger correlate to computer achievement (R=.55) from computer anxiety in computer achievement (R=-.50) which allows the attitude towards computer variable to inter into the regression equation first. and because the correlation coefficient between the attitude towards computer variable and computer anxiety relatively high (-0.70) the effect of computer anxiety in predicting computer achievement has been through attitude toward computer variable which first entered into the regression equation. As for the male sample, the multiple regression analysis results indicate in table (8)

Table (8)

Results of stepwise regression analysis in computer achievement on the predicted variables for the male sample

Predicted by	Predicts	Steps	R	R2	R <sup>2</sup>	F value	F indication
Computer achievement	Attitude towards computer	1	.6000	.36000	.36000	90.00	(P <0.001)
	Computer anxiety	2	.61875	.382857	.022857	5.88	(P =0.001)

That the predicted variables (attitude toward computer and computer anxiety) explained (38.3%) of computer achievement degrees variance of the male sample. Attitude towards computer explained (2.3%). As is clear from Table (8) that the change values in the correlation coefficient box was statistically significant for each variable of the predicted variables.

and the explanation for attitude towards computer is due to most explained variation of the computer achievement (30.25%) out that attitude towards computer was stronger correlate to computer achievement (R=.60) from computer anxiety in computer achievement (R=.55) which allows the attitude towards computer variable to inter into the regression equation first. also because the correlation coefficient between the attitude towards computer variable and computer anxiety relatively high (R=-0.75) which made the attitude towards computer takes the biggest share of the explained variation because it has entered into the regression equation firstly and because the correlation between it and the computer anxiety is high.

As the female sample stepwise regression analysis results indicate table (9) that predicted variables (attitude toward computer & computer anxiety) explained (27.71%) of varying degrees of computer achievement in females' sample. And explained the attitude towards computer (25.0%) of this variation and explained the computer anxiety (2.71%). As clear in Table (9) that the values of the changes of the correlation coefficient box was statistically significant for each variable of predicted variables.

Table (9)

Results of stepwise regression analysis in computer achievement on the predicted variables for the female sample

Predicted by	Predicts	Steps	R	R2	R <sup>2</sup>	F value	F indication
Computer achievement	Attitude towards computer	1	0.500	0.2500	0.2500	40.33	(P <0.001)
	Computer anxiety	2	0.52636	0.277056	0.027056	5.05	(P =0.03)

and the explanation for attitude towards computer is due to most explained variation of the computer achievement (25%) out that attitude towards computer was stronger correlate to computer achievement (R=.50) from computer anxiety in computer achievement (R=-.45) which allows the attitude towards computer variable to inter into the regression equation first. also because the correlation coefficient between the attitude towards computer variable and computer anxiety relatively high (R=-0.65) which made the attitude towards computer takes the biggest share of the explained variation because it has entered into the regression equation firstly and because the correlation between it and the computer anxiety is high.

will be noted from the previous view of the stepwise regression analysis results that variables of the attitude towards computer and computer anxiety shares in the explanation of varying degrees of computer achievement,



but in different ratios of different study samples, has explained a ratio (38.28%) in male sample, and explained a ratio (27.71%) for female sample and a ratio of 32.8% for the whole study members group.

The ratio variation which these expectation explained from the contrast for the dependent variable due to the Correlation coefficients value variation between it and between the dependent variable from sample to another.

Whenever the Correlation coefficients increased between the expectations from a side and the dependent variable from another side, the ratio variation explained from the dependent variable will increase with it.

Also the increase affected by in the rat of the explained variation of variance of the dependent variable with value of internal correlation coefficients between these expectations. This ratio is increased by the decrease of internal correlation coefficients value between it and this ratio decreased by the increase of internal correlation coefficients value between these expectations.

It also depends on what each of these expectations adds to the explained variation ratio of the dependent variable variation also on the order of its entry in the regression equation as well, as the previous variables had the entry at the regression equation by adding a greater share of the explained variation, whereas it takes less share if its role in entering this equitation was delayed, especially if its connection with its previous variables of entry highly connected. Advantage from this that the presence of a large number of independent variables in the regression model is not the favorite strategy.

And it's better to use expectations each of them highly connected with the dependent variable and its internal connections among them are low.

And in this the researcher target may be achieved behind his predictive study by busing number of expectations may give the best value for the multiple correlation coefficient box.

To build regression equations in the different study groups according to the values of the regression coefficients and the value of "T" and the level of its indication, and the regression constant for each group of study samples evidenced in table (10).

Table (10)

Values for the regression coefficients and the value of "T" and levels of its significance, and regression constants in different study groups

Sample	variations	Regression coefficient	Standard error	T Value	T significance	Regression Constant
Overall Sample	Attitude towards computer	0.39126	0.06659	5.889	P=.0000	45.649
	Computer anxiety	-0.24052	0.07102	-3.386	P= .0008	
Male Sample	Attitude towards computer	0.45918	0.10092	4.550	P= .0000	38.669
	Computer anxiety	-0.26374	0.10868	-2.4267	P=0.016	
Female Sample	Attitude towards computer	0.33965	0.09095	3.731327	P=.0002	50.2
	Computer anxiety	0.229989	-0.10231	-2.24775	P=.0262	

Notes from a table (10) that the regression coefficients for predictors were statistically significant at all study samples, allowing it to enter the regression equations to predict the computer achievement grades from the members of these samples on the attitude toward computer scale and their scores on computer anxiety scale.

In light of the results of this study the researchers believe that using some predictors related to the cognitive side as scientific subjects average of high school examination in addition to some predictors from the emotional side, as is the case in the current study.

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